Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Tertiary.—Sr. Lotti (Boll. Com. Geol. d'Italia, 1884) gives a summary of his investigations into the age and structure of the granites of Elba and the surrounding districts. These granites show two principal types, granite and quartzose porphyry; the latter traverses and is involved with the sedimentary rocks of the Apennines in such a way that geologists have been compelled to pronounce it Eocene. As it is against the usual idea to refer granites to so recent an epoch, an effort has been made to find a separation between the granite and the quartzose porphyry into which it passes. This Sr. Lotti declares to be thoroughly inadmissible, and at direct issue with the facts. The feldspathic rocks graduate from a normal or tourmaliferous granite to a quartzose porphyry through varieties with or without tourmaline, but the Pre-silurian gneissic schists of the eastern part of the Elba show a gradual passage toward granite, and are traversed by granite seams. Sr. Lotti concludes that not only are the porphyry, granite and intermediate varieties of the same age, but that all were formed at the expense of the gneissic schists in the Eocene epoch, while the Eocene strata were contorted and dislocated, and fragments embedded in the erupted mass.

Quaternary.—M. A. Favre has presented the Paris Academy of Sciences with a map of the ancient glaciers of the northern slope of the Swiss Alps and of the chain of Mt. Blanc. This map indicates the development of the glaciers, and, so far as the scale permits, shows also the glacial deposits, erratic blocks, and moraines. Besides showing the direction and extension of the seven principal glaciers, M. Favre demonstrates how, on taking the height of an erratic block above the neighboring valley, it is possible to know what was formerly the thickness of the ice over that point, and also how the slope of the surface of the ancient glacier can be determined. In this way he has determined thicknesses of 1181, 1220 and 1235 meters. The author particularly insists upon the extension of the glacier of the Rhone, which at certain points reaches a height of 1650 meters, and for a length of 149 kilometers and a width of 45 was almost horizontal. The moraines of these old glaciers are numerous. Many are composed of clayey or marly deposits with striated pebbles and blocks of greater or less size, while others are almost entirely formed of blocks of crystalline rocks. Examples of the latter occur at Combloux and Césarege, in the valleys of the Arve, Rhone, etc. Here are blocks which contain from 700 to even 2000 cubic meters.

BOTANY.[1]

THE FERTILIZATION OF PHYSOSTEGIA VIRGINIANA.—In marked contrast with the imperfectly proterandrous almost synacmic *Brunella vulgaris* is the closely related Physostegia. The proterandry and movements of filaments and styles are here decided. On the opening of the bud the almost equal anthers converge and place themselves in line across the throat of the flower. The stamens curve forward so as to come into more ready contact with the body of the visiting bee (Fig. 1), while the style is curved backward and lies under the upper lip of the corolla. When the stamens become effete the pairs on either side diverge (Fig. 2) and bend back, stationing themselves under the upper lip while the style moves forwards, takes the place of the effete stamens and opens its bilobed stigma (Fig. 3). Such is the proterandry of this flower which, as most of its allies, requires the visits of bees for its fertilization.

---

[1] Edited by PROF. C. E. BESSEY, Lincoln, Nebraska.

The flower is of a pale rose color, which is deeper on the upper lip. The upper and lower lips are spotted with purple, while the interior of the inflated corolla is striped with the same color, the lines leading downwards and backwards towards the stamens, the filaments serving as guides to the honey, which lies in a tube formed by the contraction of the corolla along the line of the outer set of filaments. In this way two tubes are formed, an upper and larger one, which is convenient for the bees, and a lower contracted one which appears more accessible at first sight, but contracts below, so as to doom to disappointment the mistaken insect. The lines of purple lead to the true entrance. In this species, as in the Brunella, the honey gland seems to be a body of greenish-yellow color, occupying the place of a fifth nutlet supposing that the flower contained that many.— *Aug. F. Foerste, Granville, Ohio.*

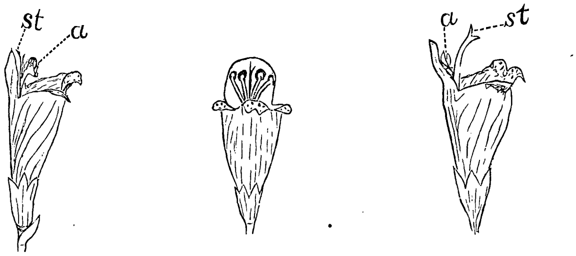

Fig. 1. Fig. 2. Fig. 3.

Physostegia virginiana. FIG. 1.—Male state. Fig. 2.—Stamens curved back. FIG. 3.—Female state; *a*, anthers; *st*, stigmas.

BEGINNING BOTANY.—In teaching botany during the past twelve or fifteen years, I have generally set students at work for several weeks, in the beginning, with specimens only. These are given each member, and he is required to investigate and report at the meeting of the class. Some of these reports are made in writing. More or less of this work is done throughout the course. It has proved very satisfactory to pupil and teacher.

In March, before the opening of vegetation, the last class of freshmen began with the study of young branches of numerous kinds of deciduous and evergreen trees and shrubs. I send you the notes of W. F. Hoyt, one member of the class. I do not know that they are any better than many others which were presented:

" A comparison of the leaves, buds and young branches of the Scotch pine with those of the Austrian pine.

" To a casual observer there is little difference between these two pines, but on close inspection it will be noticed that the Austrian bears a medium-sized cone, while the Scotch has a very small one, grown sparingly. [It was not intended to study cones at this time.]

" Again, the leaves of the Austrian pine are from five to five and a-half inches long. They are thick and stiff, while those of the Scotch pine are from two to three and a-half inches long, and are quite slender and limber. In both the leaves have the same shape; in both the leaves are in pairs, and when placed together make a long round body. The covering of the lower part of the leaves extends much farther up on the Austrian, and is of a much darker color than on the Scotch pine. The leaves of the Scotch pine are lighter in color; the tree and branches more slender.

" The outer bark of the Austrian is thicker and darker, and the primary leaf scales shows very plainly. The leaf scales do not show plainly in the Scotch pine. Both have three layers of bark, the outer being tough and thin, the next dark-green and spongy, the inner white; in the Austrian quite tender; in the Scotch tougher and more compact.

" As a general rule the Scotch pine sends out five branches in a whorl, while the Austrian pines show no such regularity in this respect. On cutting the limb the Scotch pine discharges more pitch than is discharged by the Austrian pine. The wood of the Scotch pine is a little lighter in color, the rings more plainly marked and the pith a little larger."

In a comparison of the twigs of butternut with those of the pepperidge, A. E. Hager observed, among other things, that the pith of pepperidge contained numerous hard transparent partitions. Our text-books all tell us of the cavities in the pith of butternut.

Work done later in the course was better done.—*W. J. Beal. Lansing, Mich.*

THE STUDY OF PARASITIC FUNGI.—One of the hopeful signs of the times, so far as botany is concerned, is the increasing interest taken in the study of the lower plants in this country. The Fungi and the minute forms of Algæ have been too long neglected excepting by a few lonely specialists here and there who quietly worked away, while almost entirely ignored by the mass of botanists and collectors. Now, however, the eyes of collectors, while not less open to the higher plants, are learning to look for plants of all kinds, from the simplest protophytes to the most conspicuous of phanerogams. We may hope some day to see a manual of botany which will include within its covers descriptions of all the species of the region it covers.

The Preliminary List of the Parasitic Fungi of Wisconsin, by Professor Trelease, must prove a considerable aid and strong incentive to the collection of Fungi in Wisconsin. About 270 species are recorded, a large list when we remember that it is confined to the parasitic forms only. Most of the species were collected about Madison by the author, and all, with but "one or two exceptions," are preserved as herbarium specimens. Throughout the list hosts and localities are given, and in many cases these are accompanied by valuable critical notes, indicating thorough and careful work.

The Peronosporeæ of the list number twenty-five species, of which four belong to the genus Cystopus, one to Phytophthora and twenty to Peronospora. The Perisporiaceæ number twenty species, the Uredineæ sixty-five (not counting isolated Uredo and æcidial forms, seven of the former and twenty-seven of the latter) and the Ustilagineæ twenty-two species.—*C. E. Bessey.*

VARIATION IN CULTIVATED PLANTS.—If seed of the various sorts of the cabbage family be planted alongside each other, a resemblance is observed between all the seedlings at a certain date; it is only as growth proceeds that the development begins to differentiate differences. It seems probable, through a study of the law of breeding, that the period of divergence marks the period at which original selection commenced in order to obtain our present forms. If this observation be substantiated, then by careful study of seedling development we shall be able to determine points of departure at which human guidance shall be enabled to direct in line with the tendencies of the plant. This study of plant growth after the method used in zoölogy, the study of embryology so to speak, not the term "embryology" as applied to nature's plant but that of man's plant, the period between the seed and the differentiation from the natural type, offers much promise of good results, and it seems quite probable that as we attempt to influence the development of the plant before or at the time of the differentiation into the acquired properties of the mature plant we can initiate a new series of selections in certain varieties whose root, bulb, stem and foliage finds use.—*E. L. Sturtevant in 2d Ann. Rept. N. Y. Agrl. Expr. Station.*

BOTANICAL NOTES. — The post-graduate course of study in botany offered by Syracuse University is significant of changed notions as to what advanced work in botany consists of. The course is two years in length and includes vegetable histology, physiology, the study of phanerogams, pteridophytes, mosses, liverworts, lichens, algæ and fungi. Collections are required in each group, thus insuring a practical acquaintance with the plants in their native habitats.——In the first annual report of the Wisconsin Agricultural Experiment Station, Professor Trelease gives accurate popular descriptions of the onion mold (*Peronospora schleideniana* D. By.) and the apple scab and leaf blight (*Fusicladium dendriticum* Wallroth). Both articles are illustrated by wood-cuts, which add materially to their value. Work of this kind is, in our opinion, much more valuable than that which usually fills the reports of these stations. We wish we could see more papers like Professor Trelease's. May we not commend to the directors of agricultural stations the remark of the editor of *Science* in a recent number of that journal, in discussing the proper aim and scope of such stations: "The great need of agriculture to-day is not new varieties of plants or improved breeds of animals, new methods of cultivating the soil or improved systems of farming; all these, and many other like things, are good; but the two great wants are a better knowledge of principles and greater intelligence to apply them."——Dr. B. D. Halsted, of New York, has been elected to the chair of botany in the Iowa Agricultural College.——The December *Journal of Botany* contains a fine photograph of the late George Bentham.——We see it announced in English journals that translations of De Candolle's Origin of Cultivated Plants, and De Bary's Anatomy of the Vegetative Organs of the Phanerogams and Ferns have recently been brought out, the former by C. Keagan Paul, London, and the latter by the Clarendon Press, Oxford. ——De Bary's "Vergleichende Morphologie und Biologie der Pilze, Mycetozoen und Bacterien has just reached us, but too late for further notice at this time. It is a stout volume of 558 octavo pages and is illustrated with 198 wood-cuts. This work merits an early translation.——*The Journal of Mycology*, by J. B. Ellis and W. A. Kellerman is announced to appear soon.

ENTOMOLOGY.

Embryology of Aphides.[1]—Witlaczil corrects many misconceptions and adds largely to our knowledge of insect embryology. His researches were chiefly on the viviparous females. The oviparous females and the males appear late in season, and have much the same course of development as is here described. The winter-eggs are specially characterized by a large amount of yolk.

1. *The Egg.*—The egg has a peripheral part consisting of clear protoplasm, and a central part consisting chiefly of granulated yolk. The germinal vesicle with nucleus is in the central part, and is capable of amœboid movements. The anterior and poste-

---

[1] By Dr. Emanuel Witlaczil, of Vienna (Zeitschrift f. Wiss. Zool., Bd. XL, 1884, p. 559–696, and taf. XXVIII–XXXIV).